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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,970	11/21/2003	Alan K. Wu	60,680-756	3569

7590 08/11/2005  
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EXAMINER
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DUONG, THO V

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/719,970	<b>Applicant(s)</b> WU ET AL.	
	<b>Examiner</b> Tho v. Duong	<b>Art Unit</b> 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 19-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 17, 18 and 27 is/are rejected.
- 7) ☒ Claim(s) 11-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/22/04; 4/11/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

Claims 19-21 and 24-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election of species of figures 1-5 was made **without** traverse in the reply filed on 6/16/2005. Upon further review on the claims, the examiner further withdrawn claims 16 and 22-23. Regarding claim 16, the claimed subject matter of a high-pressure drop orientation is not within the scope of the elected species of figures 1-5, which directs to a low-pressure drop orientation. Regarding claims 22-23, the claimed subject matter of a third fluid and fitting for the third fluid is not within the scope of the elected species of figures 1-5, which directs to a two fluids heat exchanger system. Furthermore, the examiner agrees that claims 1 and 27 are generic to all of the species. Therefore, claims 16 and 19-26 have been withdrawn from further consideration. Claims 1-15, 17-18 and 27 will be treated under merits.

### *Drawings*

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed subject matter in claims 16 and 22-23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing

Art Unit: 3743

should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conffinberry (US 4,096,616) in view of F. A. Burne et al. (US 3,323,586). Conffinberry discloses a heat exchanger comprising an outer tube (22) having an outer surface; an inner tube (24) received inside the outer tube and concentric therewith, wherein an axial fluid flow passageway (28) is formed between the inner and outer tubes; a first inlet and a first outlet in fluid communication with the axial passageway, the first inlet and the first outlet being axially spaced from one another; at least one outer fluid passageway (26) being formed along the outer

Art Unit: 3743

surface of the outer tube; a corrugated strip fin (34) being arranged in the outer fluid passageways; each of the strip fins comprising a plurality of rows of corrugation; the corrugation each comprising a top portion, a bottom portion, and a side wall connecting the top and bottom portions, the bottom portion being in contact with the outer tube; the strip fins (34) extends between a second inlet (42) and a second outlet (44) which are circumferential spaced from one another by about 180 degrees. Conffinbery does not disclose that the outer passageway is a circumferential fluid flow passageway. Burne discloses (figures 1-3 and column 3, lines 49-65) a concentric tube heat exchanger having an axial flow passageway formed between the inner tube and an outer tube and an outer passageway formed outside of the outer tube, wherein the outer fluid passageway (23) includes two circumferential fluid passages that has each fin (15) located in each of the circumferential passage with gaps (21, 22) between the edges of the fin and the fins (15) having openings or hole inside of the fins allowing fluid to flow circumferentially for the purpose of increasing heat exchanger surfaces area and minimizing pressure drop of the heat exchanger due to the circuitous peripheral flow paths. Since Conffinbery and Burne are both from the same field of endeavor and/or analogous art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use Burne's teaching of peripheral flow path in Conffinbery's heat exchanger for the purpose of increasing heat exchanger surfaces area and minimizing pressure drop of the heat exchanger due to the circuitous peripheral flow paths.

Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conffinbery and Burne as applied to claim 1 above, and further in view of D. Menze (US 3,468,371).

Conffinbery and Burne are substantially disclose all of applicant's claimed invention as

Art Unit: 3743

discussed above except for the limitation a metering cap having at least one aperture partially block the flow through the inner tube. Menze discloses (figures 1-4 and column 2, lines 44-65) a concentric tube heat exchanger having a metering cap (8) with at least one aperture located at an end of the inner tube (3) for the purpose of controlling and turbulating fluid flowing through the inner tube to assist heat transfer across the inner tube walls. Since Conffibery and Menze are both from the same field of endeavor and/or analogous art, it would have been obvious to one having ordinary skill in the art, at the time the invention was made to use Menze' teaching in Conffibery's heat exchanger for the purpose of controlling and turbulating fluid flowing through the inner tube to assist heat transfer across the inner tube walls.

#### *Allowable Subject Matter*

Claims 11-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stenlund (US 4,964,459) discloses a concentric tube heat exchanger.

Takayasu (US 3,828,581) discloses a heat exchanger having corrugation fins disposed within concentric tubes.

R. C. Zeidler (US 3,083,662) discloses a heat exchanger having corrugated fins.

Staffa (US 5,732,769) discloses a double pipe heat exchanger.

Art Unit: 3743

Wunder (US 4,059,882) discloses an annular tube-fin heat exchanger.

Hilicki et al. (US 3,732,921) discloses a heat exchanger having fins disposed between inner and outer tubes.

Stay (US 5,558,069) discloses a concentric tube heat exchanger having corrugations fins on each flow passageway.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tho v Duong  
Primary Examiner  
Art Unit 3743



TD  
July 24, 2005